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:ULTY OF MEDICINE

Health Telematics Unit
;204 Health Sciences Centre
Telephone: (403) 220-7452
Fax: (403) 270-8025
Email: hebert@ucalgary.ca

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Submitted by:
Dr. Marilynne Hebert
Health Telematics Unit
Faculty of Medicine
University of Calgary

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TRSI 2002 – Résumé (1 page)

Le **TRSI** (atelier d'été de recherche en télésanté), organisé pour la première fois en juillet 2000 par le centre de télématique de santé de l'université de Calgary, est devenu un événement annuel concentré sur la recherche et l'évaluation de programmes de télésanté et d'initiatives de télé-apprentissage en matière de soins de santé. Le TRSI 2002 a fait ressortir trois thèmes : les impacts socio-économiques, techniques et politiques de la télésanté. Soucieux d'une mise en œuvre durable de cette dernière, les participants, membres de l'enseignement et des secteurs public, professionnel et privé, ont activement discuté de ses impacts et des recommandations de nature à faire progresser la politique et la recherche dans ce domaine.

Le **Document de travail du TRSI 2002**, qui s'appuie sur les présentations, les discussions en sous-groupes et des références de base, est largement diffusé à des collègues impliqués en télésanté et cybersanté, dont les participants et intervenants au TRSI (depuis 3 ans), des coordinateurs sanitaires, membres des conseils d'administration de la Société canadienne de télésanté et du COACH, départements universitaires dotés de programmes d'informatique de santé, sous-ministres de la Santé, chefs de file de l'industrie et autres.

Axes prioritaires de recherche : le récent intérêt pour l'impact des interventions en télésanté sur la santé de la population pourrait faire progresser la recherche sur leur portée socio-économique dans certains domaines, tels la conceptualisation de leur contribution à la santé et aux soins de santé; la conception de nouveaux modèles de services de santé et l'intégration transparente de la cybersanté; l'élaboration de modèles et d'indicateurs économiques appropriés pour en déterminer les avantages. Reste à définir un cadre de recherche en cyberpolitique répondant au besoin d'une recherche à orientation prédéterminée. Le travail effectué à ce jour sur l'interopérabilité et les normes a montré la nécessité d'une collaboration soutenue entre partenaires de l'industrie, gouvernement, recherche et pratique.

Axes prioritaires en matière d'évaluation : l'utilisation cohérente sur le terrain de cadres d'évaluation valides et sûrs fournira d'utiles données comparatives. L'adoption de mécanismes pratiques pour appliquer les résultats des recherches à l'élaboration d'un cadre d'évaluation et celle d'outils de collecte de données pourront renforcer les activités de « transmission du savoir » qui intègrent les résultats des recherches à la pratique. En outre, l'existence d'une base de formation élargie, comprenant des professionnels de la santé, coordinateurs sanitaires, chercheurs, responsables de l'élaboration des politiques et décideurs, sensibiliserait à l'aspect « glocal » de la politique, c'est-à-dire à ses implications locales et mondiales, et à la nécessaire interpénétration des politiques sur de nombreux plans.

Axes prioritaires pour l'élaboration des politiques : une politique intégrée à la prise de décision aux plans régional, national et international doit soutenir l'intégration de la cybersanté aux soins traditionnels. La traduction des résultats de recherche et d'évaluation en une politique sera un facteur décisif pour la progression du programme qui a besoin de champions dans tous les secteurs : monde universitaire, gouvernement, industrie et pratique. On y parviendra en profitant des occasions de développer la participation inter-groupe, par exemple, par la présence accrue des responsables de l'élaboration des politiques dans la planification et la mise en œuvre des initiatives de cybersanté.

Recommandations d'ensemble : plusieurs points communs aux trois thèmes du TRSI ont été dégagés. Il faut associer des politiques rationnelles aux implications des initiatives de cybersanté sur les ressources humaines, et notamment modifier le rôle des professionnels, gérer les changements organisationnels et préparer les intéressés à les accepter. La durabilité de la télésanté dépend de son intégration aux services plutôt que d'initiatives perçues comme

« auxiliaires ». En général, les participants ont reconnu les avantages de parvenir à un consensus sur les normes et les méthodes et outils d'évaluation, mais la mise en œuvre pose encore problème. Afin de soutenir une démarche par recherche de consensus, les chefs de file en recherche et évaluation doivent jouer un plus grand rôle dans la transmission et la diffusion des résultats.

1. TRSI 2002 – One Page Summary

The Health Telematics Unit at the University of Calgary hosted the first **Telehealth Research Summer Institute (TRSI)** in July 2000. It has become an annual event focusing on research and evaluation of telehealth programs and telelearning initiatives in health care. Three themes underscored TRSI 2002: socio-economic, technical and policy impact of telehealth. Participants included members of the public, professional, academic, and private sectors interested in telehealth implementation and sustainability. They were actively engaged in discussions of telehealth impact and recommendations to advance policy and research.

Presentations and small group discussions as well as key references provided the basis for the **TRSI 2002 Discussion Document**. This document is being widely circulated to colleagues with an interest in telehealth and e-health, including TRSI participants and speakers (all 3 years), Telehealth Coordinators, Canadian Society of Telehealth and COACH Board Members, University departments with health informatics programs, Deputy Ministers of Health, Industry leaders and others.

Research Priority Areas: Given a more recent focus on the population health impact of telehealth interventions, research into the socio-economic impact of telehealth could advance in a number of areas, such as conceptualization of the contribution of telehealth initiatives to health and health care; design of new health service models that seamlessly incorporate e health; appropriate economic models and indicators to determine benefits. There is a continued need for e-policy research framework development and responding to the need for policy-driven research. As demonstrated by the work to date on interoperability and standards, continued collaboration among partners in industry, government, research and practice is required.

Evaluation Priority Areas: Evaluation frameworks that are valid and reliable, as well as used consistently in the field are needed to provide useful, comparative data. The "knowledge translation" activities that move research results into practice could be strengthened through adopting practical mechanisms to apply research findings in evaluation framework development and data collection tools. A broader training base that includes health care professionals, telehealth coordinators, researchers, policy-makers, and decision-makers may also increase awareness of the "glocal" aspect of policy, i.e. the local and global implications, as well as the need for policy interrelationships at multiple levels.

Policy Development Priority Areas: Policy is both necessary to support integration of e-health into traditional care as well as itself must be integrated at regional, national and international levels of decision-making. Translation of research and evaluation findings into policy is a critical factor in moving this agenda forward and requires champions in all sectors: academia, government, industry and practice. Achieving this will require taking advantage of opportunities for increased participation across groups, for example, including more policy developers in planning and implementation of e-health initiatives.

Overall Recommendations: A number of issues common to all three themes of the TRSI were identified. There is a need for sound policies related to the human resource implications of e

health initiatives, including changes in professional roles, organizational change management and stakeholder readiness to accept the change. Telehealth sustainability depends on integration into existing services rather than initiatives being seen as "adjuncts." While participants generally recognized there are benefits to developing consensus on standards and evaluation tools/methods, implementation challenges remain. Leaders in research and evaluation need to take a greater role in the translation and dissemination of results to support a consensus building approach.

2. TRSI 2002 - Executive Summary

2.1 Introduction

The Health Telematics Unit at the University of Calgary hosted the first **Telehealth Research Summer Institute (TRSI)** in July 2000. It has become an annual event focusing on research and evaluation of telehealth programs and telelearning initiatives in health care. The third annual TRSI was held on July 21 to 23, 2002. Participants included members of the public, professional, academic, and private sectors interested in telehealth implementation and sustainability. They were actively engaged in discussions of telehealth impact and recommendations to advance policy and research. Three themes underscored TRSI 2002: socio-economic, technical and policy impact of telehealth.

The **discussion document** is a compilation of the TRSI 2002 presentations and small group discussions as well as key references that provide additional insights. Supplementary material such as the discussion group notes and presentation slides will be posted on the HTU website early in 2003 at www.ucalgary.ca/telehealth. The TRSI 2002 discussion document is being widely circulated to colleagues with an interest in telehealth and e-health, including TRSI participants and speakers (all 3 years), Telehealth Coordinators, Canadian Society of Telehealth and COACH Board Members, University departments with health informatics programs, Assistant Deputy Ministers of Health, Industry leaders and others.

Issues related to the socio-economic, policy and technical impact of telehealth initiatives provided the focus for presentations and small group discussions throughout the TRSI 2002. Key ideas from the literature rounded out this thinking. Advancing the field of telehealth/e-health requires further dscussion around priorities in three areas: research, evaluation and policy development.

2.2 Research Priority Areas

Research activities in telehealth and e-health have been gaining momentum in the past 5-10 years as more researchers enter the field and funds are allocated to this area of research. Research activities focus on developing conceptual thinking and theoretical frameworks necessary to advance the field. Clearly there have been many developments in the area of socio-economic factors that influence determinants of health as well as health indicators. Both the presentations and discussions highlighted a more recent focus on understanding the population health impact of interventions rather than solely focusing in the short term on the local project participants.

Research into the socio-economic impact of telehealth can advance in a number of areas, particularly around conceptualization of the contribution of telehealth initiatives to health and health care. This may include design of new health service models that seamlessly incorporate e-health or appropriate economic models to determine benefits. Within the context of

determinants of health, this research could also determine appropriate indicators and measures that reflect the contribution of telehealth, including development of reliable and valid instruments for capturing data in these areas.

Not only does the research need to focus on health outcomes, but also extend into the impacts of introducing organizational change. Results of recent studies should be extended to inter-organizational changes when services cross local and international jurisdictions. Adoption of telehealth technology requires attention to a number of important research areas, including policy software, further advancing the telehealth interoperability process and human resource requirements.

Researchers must also attend and respond to the need for policy-driven research. As noted in the discussions around policy, or lack thereof, there is a continued need for framework development around e-policy research. Once policies have been established and implemented, for example policies to ensure EHR security, its implications need to be re-visited.

In an area of rapid change and development, research around 3rd wave, intelligent technologies, including digital remains critical. As demonstrated by the work completed to date on interoperability and standards on many levels, collaboration among partners in industry, government, research and practice is required.

2.3 Evaluation Priority Areas

Evaluation activities are an important aspect of applied research and require a sound conceptual basis for the selection and use of tools. Frameworks that are valid and reliable as well as used consistently in the field are needed to provide useful, comparative data. The "knowledge translation" activities that move research results into practice are an important aspect of evaluation. These could be strengthened through adopting practical mechanisms to apply research findings in evaluation framework development and data collection tools. In much the same way as common health indicators have been adopted, policy intervention may be required for the consistent use of e-health indicators. Funding programs such as CHIPP illustrate that this strategy is possible on a national level.

As the small group discussion on Day 3 illustrated, it was challenging to consider the unanticipated and potentially undesirable effects of implementing telehealth/e-health initiatives. This is partly because those involved in implementation tend to be champions who see the benefits. Evaluation can play an important role in determining the unintended consequences of adopting this technology. Questions that might be asked include: Is there an optimal mix of face-to-face and technology mediated services in a community? If so, how do we determine it? While a balance of services may be sought based on financial issues (e.g. it is more cost effective to provide video-consultation to members of a community than to financially support a specialist to live in the community), the unintended consequences may be the destruction of services in a small community as physicians do not see enough patients to stay in business.

Evaluation should extend to organizational factors including human resource implications in program implementation. This includes training for health care professionals who deliver e health services, as well as for telehealth coordinators, researchers, policy-makers, and decision-makers. A broader training base may also increase awareness of the "glocal" aspect of policy, i.e. the local and global implications, as well as the need for policy interrelationships at multiple levels.

Evaluation should also include continued testing of interoperability standards in practice. This includes an active, continued awareness of interoperability testing being communicated at national and international venues.

2.4 Policy Development Priority Areas

While the importance of policy and resulting policy issues have been recognized as part of the development of telehealth initiatives, integrating ehealth services into the traditional delivery system requires broader thinking than that required to ensure a local project or program is successful. Policy is both necessary to support integration as well as itself must be integrated at regional, national and international levels of decision-making. It is necessary to establish globally acceptable policy principles and domestic policy.

Sound evidence of the socio-economic benefits of e-health initiatives is needed prior to the move to implementation and integration. Translation of these research and evaluation findings into policy is a critical factor in moving this agenda forward. Clearly there needs to be champions in all sectors: academia, government, industry and practice for this to occur. Achieving this will require taking advantage of opportunities for increased participation across groups, for example, including more policy developers in planning and implementation.

2.5 Overall Recommendations

A number of issues were common to all three themes of the TRSI and recommendations for their resolution, include:

- Sound policies related to the human resource implications resulting from e-health initiatives are required. These should include results of research and evaluation into the changes in professional roles, organizational change management and stakeholder readiness to accept the change.
- Participants agree that telehealth sustainability depends on integration into existing services rather than initiatives being seen as "adjuncts." A number of policy considerations arise from this and require attention from funding bodies, researchers, policy makers and professional organizations (e.g. Canadian Medical Association, Canadian Nurses' Association). These include:
    - Policy implications related to remuneration and licensure are slowly being resolved. While the need for integration will continue to challenge policy development, it must remain a core tenant.
    - Policy considerations must support integration of e-health with traditional services, as well as with the Electronic Health Record.
    - Policy development must consider both the local and global impact.
- While participants generally recognized there are benefits to developing consensus on standards and evaluation tools/methods, implementation challenges remain. Leaders in research and evaluation need to take a greater role in the translation and dissemination of results to support a consensus building approach.

2.6 Summary

The annual TRSI provides a forum for interested participants from industry, government, academia and practice to actively discuss current ideas in e-health. The TRSI 2002 themes - socio-economic, technical and policy impact of telehealth - provided a framework for discussion and recommendations for future directions.

Dissemination of this discussion document will provide additional opportunities to not only stimulate discussion and debate around relevant issues, but also engage a wider audience in influencing e-health policy, practice, and research. Continued discussion and debate of relevant issues will continue at TRSI 2003 on June 25-27.

3. TRSI 2002 – Detailed Report

3.1 Introduction

The Health Telematics Unit at the University of Calgary hosted the first **Telehealth Research Summer Institute (TRSI)** in July 2000. It has become an annual event focusing on research and evaluation of telehealth programs and telelearning initiatives in health care. The third annual TRSI was held on July 21 to 23, 2002. Participants included members of the public, professional, academic, and private sectors interested in telehealth implementation and sustainability. They were actively engaged in discussions of telehealth impact and recommendations to advance policy and research. Three themes underscored TRSI 2002: socio-economic, technical and policy impact of telehealth.

The **discussion document** is a compilation of the TRSI 2002 presentations and small group discussions as well as key references that provide additional insights. Supplementary material such as the discussion group notes and presentation slides will be posted on the HTU website early in 2003 at www.ucalgary.ca/telehealth. The TRSI 2002 discussion document is being widely circulated to colleagues with an interest in telehealth and e-health, including TRSI participants and speakers (all 3 years), Telehealth Coordinators, Canadian Society of Telehealth and COACH Board Members, University departments with health informatics programs, Assistant Deputy Ministers of Health, Industry leaders and others.

3.2 Theme 1: Socio-Economic Impact of Telehealth

Research & Evaluation of the Social-Economic Impact of Telehealth

Dr Penny Jennett
Head, Health Telematics Unit, Faculty of Medicine
University of Calgary, Calgary, AB

The first presentation introduced a broad research perspective and outlined a process underway to determine socio-economic indicators of the impact of telehealth and examine evidence in the literature.

Organization and Diffusion of Telehealth Innovations: Socio-Economic Evaluation and Implementation Aspects

Dr Karl A. Stroetmann
Institute for Communications and Technology Research
Bonn, Germany (joined the Institute via videoconference from Vancouver)

Social and Economic Effects of Telehealth or "How to Develop Immunity to Telehealth Early Development Diseases"

Dr Jochen R. Moehr
Ms. Chris Anglin
Evaluators, BC Telehealth Program
School of Health Information Science
University of Victoria, Victoria, BC

The second and third presentations provided examples of projects that were developing frameworks to evaluate indicators and measures of impact.

Round table discussions explored whether the focus of telehealth impact should be on better services or better finances and identifying/measuring key telehealth success indicators. A *selected literature review* highlighted other areas of research and policy that have identified determinants of health and health indicators and how these could inform telehealth implementation and research goals.

3.3 Theme 2: Policy Impact of Telehealth

Two *presentations* approached this theme from national and international perspectives. The first explored policy implications of evaluating telehealth projects in a national funding program (e.g. CHIPP), while the second examined issues in e-health policy and the need to recognize local as well as global implications of telehealth policy development.

Research & Evaluation of the Policy Impact of Telehealth: Evaluating CHIPP
Ms. Sandra Chatterton
Mr. Robert Hanson
Senior Policy Advisors
Office of Health and the Information Highway, Health Canada

Glocal e-Health Policy-Research and Evaluation
Dr. Richard E. Scott
Fulbright New Century Scholar and Associate Professor,
Health Telematics Unit, Faculty of Medicine, University of Calgary,
Calgary, AB

Round table discussions explored key areas to drive telehealth policy. A *selected literature review* illustrated the need for integrated policy at local, national and international levels as well as the limited work done in these areas.

3.4 Theme 3: Technical Impact of Telehealth

Three *presentations* explored this theme. The first presentation included an overview and tour of the Telehealth Interoperability Laboratory at Alberta Research Council and discussion of challenges arising from an interoperability and standards development process.

Telehealth "Technology Issues"
Telehealth Interoperability Laboratory Overview - Dale Bergman
Telehealth Technical Issues - Pam Brockway, Ken Wong, Tim Fowlow, Corey Kereliuk
Alberta Research Council, Calgary, Alberta

The final presentations explored two aspects of security with an electronic health record – the work-related impact of technology and modeling e-security risk.

Policy & Peer Permission (PPP) System Project: Access Control Policies and the Potential Work-Related Impact of Technology
Dr. Maryann Yeo
Research Associate - Health Telematics Unit
University of Calgary

Modeling eSecurity Risk, Illustrated in the RASCHR - PPP Context
Mr. Merv Matson
RightsMarket, Inc.
Calgary, Alberta

Round table discussions explored the unanticipated consequences of using telehealth technology. A *selected literature review* illustrated the organizational issues in implementing telehealth technology.

3.5 Priority Areas in Advancing Telehealth/e-Health

Issues related to the socio-economic, policy and technical impact of telehealth initiatives provided the focus for presentations and small group discussions throughout TRSI 2002. Key ideas from the literature rounded out this thinking. Advancing the field of telehealth/e-health requires a discussion around priorities in three areas: research, evaluation and policy development.

3.5.1 Research Priority Areas

Research activities focus on developing conceptual thinking and theoretical frameworks that are necessary to advance the field. Clearly there have been many developments in the area of socio-economic factors that influence determinants of health as well as health indicators. Both the presentations and discussions highlighted a more recent focus on understanding the population health impact of telehealth interventions rather than solely focusing in the short term on the local project participants.

Research into the socio-economic impact of telehealth could advance in a number of areas, particularly around conceptualization of the contribution of telehealth initiatives to health and health care. This may include design of new health service models that seamlessly incorporate e-health or appropriate economic models to determine benefits. Within the context of determinants of health, this research could also determine appropriate indicators and measures that reflect the contribution of telehealth, including development of reliable and valid instruments for capturing data in these areas.

Not only does the research need to focus on health outcomes, but also extend into the impacts of introducing organizational change. Results of recent studies should be extended to inter-organizational changes when services cross local and international jurisdictions. Adoption of telehealth technology also requires attention to a number of important research areas, including policy software, further advancing the telehealth interoperability process and human resource requirements.

Researchers must also respond to the need for policy-driven research. As noted in the discussions around policy, there is a continued need for e-policy research framework development. Once policies have been established and implemented, for example policies to ensure EHR security, their implications need to be re-visited. In an area of rapid change and development, research around 3rd wave, intelligent technologies also remains critical. As demonstrated by the work to date on interoperability and standards, continued collaboration among partners in industry, government, research and practice is required.

3.5.2 Evaluation Priority Areas

Evaluation activities are an important aspect of applied research and require a sound conceptual basis for the selection and use of tools. Frameworks that are valid and reliable as well as used consistently in the field are needed to provide useful, comparative data. The "knowledge translation" activities that move research results into practice could be strengthened through adopting practical mechanisms to apply research findings in evaluation framework development and data collection tools. In much the same way as common health indicators

have been adopted, policy intervention may be required for the consistent use of e-health indicators. Funding programs such as CHIPP illustrate that this strategy is possible on a national level.

Evaluation can play an important role in determining the unintended consequences of adopting this technology, at individual, organizational and community levels. While a balance of face-to-face and technology mediated services may be sought based on financial issues, the unintended consequences may be the destruction of services in a small community as physicians do not see enough patients to stay in business.

Evaluation should extend to organizational factors including human resource implications in program implementation. This includes training for health care professionals who deliver e-health services, as well as for telehealth coordinators, researchers, policy-makers, and decision-makers. A broader training base may also increase awareness of the "glocal" aspect of policy, i.e. the local and global implications, as well as the need for policy interrelationships at multiple levels. Evaluation should also include continued testing of interoperability standards in practice. This includes an active, continued awareness of interoperability testing being communicated at national and international venues.

3.5.3 Policy Development Priority Areas

While the importance of policy and resulting policy issues have been recognized as part of the development of telehealth initiatives, integrating ehealth services into the traditional delivery system requires broader thinking than that required to ensure a local project or program is successful. Policy is both necessary to support integration as well as itself must be integrated at regional, national and international levels of decision-making. It is necessary to establish globally acceptable policy principles and domestic policy.

Translation of research and evaluation findings into policy is a critical factor in moving this agenda forward and requires champions in all sectors: academia, government, industry and practice. Achieving this will require taking advantage of opportunities for increased participation across groups, for example, including more policy developers in planning and implementation.

3.5.4 Overall Recommendations

A number of issues were common to all three themes of the TRSI and recommendations for their resolution include:

- Sound policies related to the human resource implications resulting from e-health initiatives are required. These should include results of research and evaluation into the changes in professional roles, organizational change management and stakeholder readiness to accept the change.
- Telehealth sustainability depends on integration into existing services rather than initiatives being seen as "adjuncts." A number of policy considerations arise from this and require attention from funding bodies, researchers, policy makers and professional organizations, including:
    - Policy implications related to remuneration and licensure are slowly being resolved. While the need for integration will continue to challenge policy development, it must remain a core tenant.
    - Policy considerations must support integration of e-health with traditional services, as well as with the Electronic Health Record.
    - Policy development must consider both the local and global impact.

- While participants generally recognized there are benefits to developing consensus on standards and evaluation tools/methods, implementation challenges remain. Leaders in research and evaluation need to take a greater role in the translation and dissemination of results to support a consensus building approach.

3.6 Summary

The annual TRSI provides a forum for interested participants from industry, government, academia and practice to actively discuss current ideas in e-health. The TRSI 2002 themes - socio-economic, technical and policy impact of telehealth - provided a framework for discussion and recommendations for future directions.

Dissemination of this discussion document will provide additional opportunities to not only stimulate discussion and debate around relevant issues, but also engage a wider audience in influencing e-health policy, practice, and research. Continued discussion and debate of relevant issues will continue at TRSI 2003 on June 25-27.

UNIVERSITY OF CALGARY

TELEHEALTH & e-HEALTH

Socio-Economic, Policy and Technical Impact of Telehealth

Telehealth Research Summer Institute 2002
Discussion Document

Prepared by:

Dr. Marilynne Hebert

Dr. Richard Scott

Dr. Penny Jennett

Dr. Pin Cai (Graduate Student; Project Assistant)

*Acknowledgement:
Financial Contribution from the Health Policy Research Program, Health Canada

Executive Summary*

Introduction

The Health Telematics Unit at the University of Calgary hosted the first **Telehealth Research Summer Institute (TRSI)** in July 2000. It has become an annual event focusing on research and evaluation of telehealth programs and telelearning initiatives in health care. The third annual TRSI was held on July 21 to 23, 2002. Participants included members of the public, professional, academic, and private sectors interested in telehealth implementation and sustainability. They were actively engaged in discussions of telehealth impact and recommendations to advance policy and research. Three themes underscored TRSI 2002: socio-economic, technical and policy impact of telehealth.

The **discussion document** is a compilation of the TRSI 2002 presentations and small group discussions as well as key references that provide additional insights. Supplementary material such as the discussion group notes and presentation slides will be posted on the HTU website early in 2003 at www.ucalgary.ca/telehealth. The TRSI 2002 discussion document is being widely circulated to colleagues with an interest in telehealth and e-health, including TRSI participants and speakers (all 3 years), Telehealth Coordinators, Canadian Society of Telehealth and COACH Board Members, University departments with health informatics programs, Assistant Deputy Ministers of Health, Industry leaders and others.

Theme 1: Socio-Economic Impact of Telehealth

The first presentation introduced a broad research perspective and outlined a process underway to determine socio-economic indicators of the impact of telehealth and examine evidence in the literature. The second and third presentations provided examples of projects that were developing frameworks to evaluate indicators and measures of impact. *Round table discussions* explored whether the focus of telehealth impact should be on better services or better finances and identifying/measuring key telehealth success indicators. A *selected literature review* highlighted other areas of research and policy that have identified determinants of health and health indicators and how these could inform telehealth implementation and research goals.

Theme 2: Policy Impact of Telehealth

Two *presentations* approached this theme from national and international perspectives. The first explored policy implications of evaluating telehealth projects in a national funding program (e.g. CHIPP), while the second examined issues in e-health policy and the need to

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*The views expressed in this document are the authors' and participants' and are not those of Health Canada.

recognize local as well as global implications of telehealth policy development. *Round table discussions* explored key areas to drive telehealth policy. A *selected literature review* illustrated the need for integrated policy at local, national and international levels as well as the limited work done in these areas.

Theme 3: Technical Impact of Telehealth

Three *presentations* explored this theme. The first presentation included an overview and tour of the Telehealth Interoperability Laboratory at Alberta Research Council and discussion of challenges arising from an interoperability and standards development process. The final presentations explored two aspects of security with an electronic health record – the work-related impact of technology and modeling e-security risk. *Round table discussions* explored the unanticipated consequences of using telehealth technology. A *selected literature review* illustrated the organizational issues in implementing telehealth technology.

Priority Areas in Advancing Telehealth/e-Health

Issues related to the socio-economic, policy and technical impact of telehealth initiatives provided the focus for presentations and small group discussions throughout TRSI 2002. Key ideas from the literature rounded out this thinking. Advancing the field of telehealth/e-health requires a discussion around priorities in three areas: research, evaluation and policy development.

Research Priority Areas

Research activities focus on developing conceptual thinking and theoretical frameworks that are necessary to advance the field. Clearly there have been many developments in the area of socio-economic factors that influence determinants of health as well as health indicators. Both the presentations and discussions highlighted a more recent focus on understanding the population health impact of telehealth interventions rather than solely focusing in the short term on the local project participants.

Research into the socio-economic impact of telehealth could advance in a number of areas, particularly around conceptualization of the contribution of telehealth initiatives to health and health care. This may include design of new health service models that seamlessly incorporate e-health or appropriate economic models to determine benefits. Within the context of determinants of health, this research could also determine appropriate indicators and measures that reflect the contribution of telehealth, including development of reliable and valid instruments for capturing data in these areas.

Not only does the research need to focus on health outcomes, but also extend into the impacts of introducing organizational change. Results of recent studies should be extended to inter-organizational changes when services cross local and international jurisdictions. Adoption of telehealth technology also requires attention to a number of important research

areas, including policy software, further advancing the telehealth interoperability process and human resource requirements.

Researchers must also respond to the need for policy-driven research. As noted in the discussions around policy, there is a continued need for e-policy research framework development. Once policies have been established and implemented, for example policies to ensure EHR security, their implications need to be re-visited. In an area of rapid change and development, research around 3^{d} wave, intelligent technologies also remains critical. As demonstrated by the work to date on interoperability and standards, continued collaboration among partners in industry, government, research and practice is required.

Evaluation Priority Areas

Evaluation activities are an important aspect of applied research and require a sound conceptual basis for the selection and use of tools. Frameworks that are valid and reliable as well as used consistently in the field are needed to provide useful, comparative data. The "knowledge translation" activities that move research results into practice could be strengthened through adopting practical mechanisms to apply research findings in evaluation framework development and data collection tools. In much the same way as common health indicators have been adopted, policy intervention may be required for the consistent use of e-health indicators. Funding programs such as CHIPP illustrate that this strategy is possible on a national level.

Evaluation can play an important role in determining the unintended consequences of adopting this technology, at individual, organizational and community levels. While a balance of face-to-face and technology mediated services may be sought based on financial issues, the unintended consequences may be the destruction of services in a small community as physicians do not see enough patients to stay in business.

Evaluation should extend to organizational factors including human resource implications in program implementation. This includes training for health care professionals who deliver e-health services, as well as for telehealth coordinators, researchers, policy-makers, and decision-makers. A broader training base may also increase awareness of the "glocal" aspect of policy, i.e. the local and global implications, as well as the need for policy interrelationships at multiple levels. Evaluation should also include continued testing of interoperability standards in practice. This includes an active, continued awareness of interoperability testing being communicated at national and international venues.

Policy Development Priority Areas

While the importance of policy and resulting policy issues have been recognized as part of the development of telehealth initiatives, integrating e-health services into the traditional delivery system requires broader thinking than that required to ensure a local project or program is successful. Policy is both necessary to support integration as well as itself must

be integrated at regional, national and international levels of decision-making. It is necessary to establish globally acceptable policy principles and domestic policy.

Translation of research and evaluation findings into policy is a critical factor in moving this agenda forward and requires champions in all sectors: academia, government, industry and practice. Achieving this will require taking advantage of opportunities for increased participation across groups, for example, including more policy developers in planning and implementation.

Overall Recommendations

A number of issues were common to all three themes of the TRSI and recommendations for their resolution include:

- Sound policies related to the human resource implications resulting from e-health initiatives are required. These should include results of research and evaluation into the changes in professional roles, organizational change management and stakeholder readiness to accept the change.
- Telehealth sustainability depends on integration into existing services rather than initiatives being seen as "adjuncts." A number of policy considerations arise from this and require attention from funding bodies, researchers, policy makers and professional organizations, including:
    - Policy implications related to remuneration and licensure are slowly being resolved. While the need for integration will continue to challenge policy development, it must remain a core tenant.
    - Policy considerations must support integration of e-health with traditional services, as well as with the Electronic Health Record.
    - Policy development must consider both the local and global impact.
- While participants generally recognized there are benefits to developing consensus on standards and evaluation tools/methods, implementation challenges remain. Leaders in research and evaluation need to take a greater role in the translation and dissemination of results to support a consensus building approach.

Summary

The annual TRSI provides a forum for interested participants from industry, government, academia and practice to actively discuss current ideas in e-health. The TRSI 2002 themes - socio-economic, technical and policy impact of telehealth - provided a framework for discussion and recommendations for future directions.

Dissemination of this discussion document will provide additional opportunities to not only stimulate discussion and debate around relevant issues, but also engage a wider audience in influencing e-health policy, practice, and research. Continued discussion and debate of relevant issues will continue at TRSI 2003 on June 25-27.

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1

1 Introduction

1.1 Telehealth Research Summer Institute 2002

The Health Telematics Unit at the University of Calgary hosted the first Telehealth Research Summer Institute (TRSI) in July 2000. It has become an annual event focusing on research and evaluation of telehealth programs and telelearning initiatives implemented into health care systems. The third annual TRSI was held at the University of Calgary on July 21 to 23, 2002. The TRSI 2002 actively engaged participants in discussions around evidence of telehealth impact and tried to identify recommendations to move the policy and research agendas forward. Presentations and discussions focused on issues related to socio-economic, policy and technical impact of telehealth.

Objectives of the TRSI 2000 were to:

1. Bring together leading experts in telehealth research and evaluation with respect to socio-economic impact, policy and technical issues;

2. Provide opportunities for speakers and participants to discuss and debate current issues related to evidence of telehealth impact;

3. Demonstrate the use of "telehealth technology in action" by inviting international speakers to present their papers, as well as to join small group discussions via videoconference;

4. Produce and disseminate a "white paper" from the discussion that identifies priority issues in research, evaluation and policy development.

Three themes underscored this TRSI: socio-economic, technical and policy impact of telehealth. In each of these themes speakers were invited to present overviews of the topic as well as specific examples of ongoing projects.

Participants of the TRSI 2002 included members of the public, professional, academic, and private sectors interested in telehealth implementation and sustainability (Appendix A). To encourage a wide range of views, participants were divided into three discussion groups, with an effort to ensure there was representation from all stakeholder groups. Discussions centered on one or two questions pertaining to each theme. Three experienced and knowledgeable consultants in the telehealth field were invited to join the TRSI and facilitate these small group discussions.

PC–based technology called Meeting Works® was introduced to capture the ideas generated in small group discussion and replaced traditional flipcharts for recording these. Each group had four computers being shared among 8-12 participants. Two to three participants in each small group entered their ideas on a laptop and ranked their importance.

One "chauffeur computer" was assigned to each group to handle the collection of the data.

Using wireless technology, data from each computer were combined onto a single PC for each group (Appendix B). An additional "chauffeur computer" was also assigned to the main meeting room where the large group convened for discussion of the points raised in the small groups. The ideas and their ranking were then merged into a single summary document for all three groups, which was distributed daily to the participants. The detailed results of the discussion groups are available on the HTU website at www.ucalgary.ca/telehealth. ShirWin Knowledge & Learning Systems, Inc. were engaged to support use of this technology for the TRSI.

1.2 Introduction to the Discussion Document

This document is a compilation of presentations and small group discussions held at the TRSI 2002. Supplementary material such as the discussion group notes and presentation slides will be posted on the HTU website along with this document at www.ucalgary.ca/telehealth. Key references have also been summarized to provide additional insights to the three theme areas. These 3 sources have been combined into a discussion document and used to identify key issues in moving telehealth evaluation and research forward.

This discussion document is being widely circulated to colleagues with an interest in telehealth and e-health, including TRSI participants and speakers (all 3 years), Telehealth Coordinators, Canadian Society of Telehealth and COACH Board Members, University departments with health informatics programs, Assistant Deputy Ministers of Health, Industry leaders and others.

Comments are encouraged and should be sent to Marilynne Hebert at hebert@ucalgary.ca. We will be collating and posting these comments to the HTU website in March, 2003.

2 Theme 1: Socio-Economic Impact of Telehealth

2.1 Presentations

2.1.1 Research & Evaluation of the Social-Economic Impact of Telehealth

Dr Penny Jennett
Head, Health Telematics Unit, Faculty of Medicine
University of Calgary, Calgary, AB

E-health or telehealth researchers are aware that pilot and feasibility studies have shown potential benefits for the public/patients, health practitioners, health system and the economy. However, challenges remain in defining and measuring indicators to assess the socio-economic impact of e-health solutions. Dr. Jennett outlined a process to assist with the

1) articulation of indicators, 2) retrieval of current evidence on the social and economic impact, and 3) documentation of both science (i.e. quality of the study) and policy perspectives on this issue.

An important research question was raised: "What are the optimal socio-economic indicators and proxy indicators for the assessment of the impact of telehealth (e-health) that will provide the called for evidence regarding socio-economic impact?" Two views to this question were proposed: a primary view focuses on the social determinants of health, and a secondary view around the socio-economic performance of a community. The impact of telehealth requires assessment within the context of policy, science and the determinants of health.

A current study funded by Alberta Heritage Foundation for Medical Research was described to demonstrate an approach to retrieving current evidence regarding the socio-economic impact of telehealth. A multidisciplinary team has retrieved and analyzed over 4,000 abstracts of telehealth projects, in areas of interest including access, cost, equity, safety, acceptability and quality of life. Priority subject areas were: Geriatrics, Mental Health, Rehabilitation, Child Health, Radiology and Ultrasound, Rural Remote, Home Care, Renal Dialysis, Economic Analyses, and Systematic Reviews. Preset science and policy criteria/protocols were adopted, along with and internal and external expert consultant working groups were created to assist with the work.

A case study in telehomecare for chronically ill patients illustrated a model for evaluation of social and economic benefits of e-homecare programs. The results demonstrated profound socio-economic impact in terms of quality, access, acceptability and cost. Dr. Jennett concluded that evidence is important for future policy development to integrate telehealth into the healthcare system, and thus to reach the goal of e-health sustainability.

See Bibliography References:1, 2, 3, 4

2.1.2 Organization and Diffusion of Telehealth Innovations: Socio-Economic Evaluation and Implementation Aspects

Dr Karl A. Stroetmann
Institute for Communications and Technology Research
Bonn, Germany (joined the Institute via videoconference from Vancouver)

Insufficient validation and poor implementation, particularly when ignoring organizational and institutional barriers, may account for the slow growth of telehealth applications. Dr. Stroetmann presented a structural view of this process.

Socio-economic evaluation is important to prove the benefits of telehealth and should take various players (patients, physicians, health service unit) into account. This means evaluation should be done in obvious dimensions such as patients' Quality of Life, medical outcomes, and economic efficiency as well as less obvious ones such as organization, power

and income. Evaluation should also take into account the dimension of time. To develop the organizing vision of telehealth, there are three phases to go through, which are *interpretation* of the innovation, *legitimization* of validity claims, and *mobilisation* for the material realization.

Evaluation stages (evaluability assessment, formative and summative evaluation) and criteria were discussed and illustrated with a practical example, the TEN-HMS project[5]. The TEN-HMS was a multi-center, randomized, controlled trial with 3 groups of patients to determine if telemonitoring of congestive heart failure patients at home could improve medical outcomes for these patients as well as their quality of life and efficiency of healthcare delivery processes. Four healthcare delivery models and their probability of success were discussed. The analysis suggested that telemonitoring would be successful only if the interests of the various health system players were taken into account, in addition to the proof of medical, patient, and economic benefits of such services.

Dr. Stroetmann concluded that the organizing vision of telehealth will slowly become imbedded in the normal provision of healthcare services. For legitimization, the interests of various health system actors should also be taken into account. Mobilisation will only be successful if service delivery models reflect health system idiosyncrasies and established organizational boundaries. In the longer term, more efficient service delivery models will be required by the new paradigm of seamless, patient-centered care.

See Bibliography References:6, 7

2.1.3 Social and Economic Effects of Telehealth or "How to Develop Immunity to Telehealth Early Development Diseases"

Dr Jochen R. Moehr
Ms. Chris Anglin
Evaluators, BC Telehealth Program
School of Health Information Science
University of Victoria, Victoria, BC

The BC Telehealth Program is an initiative funded by the Canadian Health Information Partnership Program (CHIPP), the Province of British Columbia and participating health authorities. Its aim is to establish a province-wide telehealth infrastructure. Services currently support rural physicians in Maternal-Child, Palliative and ER-Trauma care, as well as family contacts with patients, administrative applications, and Continuing Health Professional Education (CHPE).

Despite the early development phase of the program and its assessment, Dr. Moehr and Ms. Anglin identified both beneficial effects and areas of risk. Their likely causes and preliminary lessons learned were discussed. The evaluation covers aspects of program implementation, organizational readiness, technology performance, impact on clients and care, and institutional as well as economic impact on the health providers and residents of

B.C. Many challenges exist, such as multiple institutions and interventions involved, unknown target systems, developmental evaluation and a narrowing time window.

The evaluators participated in the program from its launch. They developed and refined an evaluation framework and instrument that included modeling and simulation approaches. Interim results identified challenges arising from data collection, a complex environment, multiple uncoordinated approaches, diverse research interests and risk of burnout of key site personnel.

Quantitative results indicated an increasing trend in the number of monthly sessions with CHPE as the most successful component. Applications in education accounted for 39% of all session counts. Administrative applications were also used more than anticipated. Although there were some highly beneficial examples in clinical applications, numerous problems still existed. These included obstacles to establishing contact, time zone effects and lack of familiarity with the equipment when needed.

A corresponding model for economic evaluation and its underlying assumptions was also presented. Savings achieved by substituting videoconferencing for administrative travel were estimated with their model. Consequences for program sustainability identified to date were also summarized.

Moehr & Anglin discussed a potential "ideal" implementation approach for telehealth programs suggested by Elford[8]. They questioned whether this approach modeled on systems engineering principles was suitable in complex multi-jurisdictional environments that are characteristic for telehealth. The experience in the BC Telehealth Program suggested that a phased implementation approach might be appropriate. It could start with comparatively easy applications, such as education or administrative support, and proceed through scheduled clinical consults to emergency consults. During the early phases, technical and personnel infrastructures can be prepared and then followed by a policies/procedures framework as well as the governance and socio-legal infrastructure for subsequent phases.

2.2 Round Table Discussions

2.2.1 Key Impact Areas: Focus on Better Services or Better Finances?

The first round table question was intended to generate discussion around where we expect telehealth to have an impact. The following question was posed to each discussion group:

> *From a socio-economic perspective, in what key areas should telehealth have an impact on the health care system for us to proceed? Should we limit our thinking to "better services" such as increased access to services, convenience; or "better finances" such as financial efficiency,*

cost-effectiveness?

Discussion Summary

All groups agreed that we should not limit our thinking to either "better services" or "better finances". Access to health care was a key issue for all groups and should include access to services as well as health information by patients, health care providers and researchers. From the perspective of the Canadian health care system, universal access to health care service should be supported in terms of alleviating the effects of geographic, economic, and social barriers to health care. Target populations for telehealth should therefore include the geographically remote (rural areas), the elderly and children.

Other issues to consider in evaluating the socio-economic impact of telehealth applications were identified. Improved quality in patient care, such as more accurate diagnosis, was one such important issue. In addition, population health outcomes beyond the health care system level were identified as important. This included potential positive impact on social-economic development as a result of improved health of general population. Short and long-term affordability in relation to costs of care and return on investment was another important socio-economic impact of telehealth.

Another potential impact to consider was related to more effective human resource utilization, including:

- human resource development in order to offer telehealth services,
- distribution and utilization of expertise (e.g. it could be drawn from more sources and beyond borders if necessary and appropriate),
- greater efficiencies in use of time and resources (e.g. decreased wait times for services when required), and
- better retention of providers in remote regions through education and opportunities for consultation.

On a broader level, rather than focus on specific outcomes, adopting *guiding principles* was determined to be an important idea to move telehealth forward. The question then becomes whether the commonly accepted goal of telehealth is medical/healthcare need, ease of implementation or economic benefit.

2.2.2 Identifying and Measuring Key Success Indicators

The second roundtable question was intended to generate discussion around how we might define success with respect to telehealth applications and programs. The following question was posed to each discussion group:

> *What are the key socio-economic indicators of "successes or failures" in telehealth implementation? How should we measure these? In other words, what information do we need to make sound decisions about expansion and sustainability of telehealth services (i.e. what is quality evidence?)*

Discussion Summary

Participants agreed that broad public acceptance by both users and policy makers was a key indicator of success. With complete integration of telehealth into daily work, health policy and the healthcare system, the term "telehealth" would be phased out. Other related success indicators included partnerships and collaboration in terms of governance structure, change management process and policies, multi-jurisdiction policies/legislation, existence of technical infrastructure and sustainability assessments.

Telehealth implementations could also be considered successful if they met demonstrated needs of patients, healthcare providers, and healthcare system. Measures of patient related determinants of health (income, social status, social support networks, education, employment, working conditions, social environments, etc.), the number of virtual versus actual home visits per nurse and patient referral patterns may be measures of meeting stakeholder needs. Other suggested measures included increased client satisfaction in terms of access, quality of patient care, quality of life, and increased health professional satisfaction.

Affordable services and systems may also be key success indicators, considering system, administration and training costs, as well as efficiency in resource use. Measures may include improved continuity, less duplication of tests, better communication between levels of care and care giving teams, better patterns of care, reduced use of hospital beds and drugs, number of specialized and unspecialized services.

Increased access to services was also identified as a key success indicator. Underserved populations should have more timely access to the most appropriate provider, and reduced transportation costs.

2.3 Selected Literature Review – Socio-Economic Impact

Many studies suggest that telehealth could provide socio-economic benefits in a number of areas including cost effectiveness, health outcomes, access and quality of care. However, high-quality studies with credible evidence are scarce, and there is no agreement on which socio-economic indicators are most appropriate to evaluate telehealth applications.

A systematic review of telehealth studies examined current evidence of the benefits of telemedicine[9,10]. Sixty-six scientifically credible studies, retrieved from 1966 to 2000, reported administrative changes, patient outcomes or results of economic assessment, in comparison to non-telemedicine group. Of these, 37 studies (56%) suggested that telemedicine had advantages over the alternative approach, 24 (36%) drew attention to some negative aspects or were unclear whether telemedicine had advantages and 5 (8%) found the alternative approach had advantages over telemedicine. The most convincing evidence was found in studies of teleradiology, telemental health, transmission of echocardiographic images,

teledermatology, home telecare and some medical consultations. Unfortunately, even for these applications, most of the available literature referred only to pilot projects and short-term outcomes, which limits generalizability of most assessment findings. There is still a great need for high-quality evaluation studies to provide evidence required by decision makers in health care.

A systematic framework for evaluating the socio-economic benefits of telehealth has not guided most studies. Clearly defined socio-economic indicators may help investigators to improve their study designs. Although there is currently no agreement on such outcome measures for telehealth applications, it might be helpful to look at the socio-economic indicators identified in other areas.

The Conference Board of Canada has published a *Performance and Potential* "report card" since 1996 with respect to the social and economic health of Canada[11]. This comprehensive list of 40 indicators was developed to assess Canada's performance in six diverse categories: the economy, labor markets, innovation, the environment, education and skills, and health and society. The 2002-2003 Report[12] looks ahead to 2010 to "see where Canada will be if its current economic and social policies continue."

Health Canada has also identified population health as a key approach for policy and program development aimed at improving the health of Canadians. They note: "The goals of a population health approach are to maintain and improve the health status of the entire population and to reduce inequities in health status"[13]. This approach establishes 12 key factors or conditions that determine the level of health of every Canadian, including:

- income and social status,
- social support networks,
- education,
- employment/working condition,
- social environments;
- physical environments,
- personal health practices and coping skills,
- healthy child development,
- biology and generic endowment,
- health services,
- gender, and
- culture[14].

Equally important are the indicators used to measure health status as outlined in a recent report: *Healthy Canadians – A Federal Report on Comparable Health Indicators 2002*[15]. The report notes this is the "first time that health ministries from all fourteen jurisdictions, including the federal government, are concurrently reporting to their constituents on a set of jointly-agreed indicators addressing health status, health outcomes and quality of service."

These 3 areas of comparable reporting are meant to help Canadians' see "their governments' progress in attaining goals and objectives in the delivery and renewal of the health care system," which include indicators of:

- Health Status
  - life expectancy,
  - infant mortality,
  - low birth weight,
  - self-reported health;
- Health Outcomes
  - change in life expectancy
  - improved quality of life
  - reduced burden of disease,
  - illness and injury;
- Quality of Service
  - Waiting times for key diagnostic and treatment services
  - Patient satisfaction
  - Hospital
  - Access to 24/7 first contact health services
  - Home and community care services
  - Public health surveillance and protection
  - Health promotion and disease prevention.

If e-health and telehealth applications are expected to affect the health and health care of Canadians, then key determinants and indicators of health can offer investigators a set of criteria to develop and evaluate these innovations.

3 Theme 2: Policy Impact of Telehealth

3.1 Presentations

3.1.1 Research & Evaluation of the Policy Impact of Telehealth: Evaluating CHIPP

Ms. Sandra Chatterton
Mr. Robert Hanson
Senior Policy Advisors
Office of Health and the Information Highway, Health Canada

Ms. Chatterton & Mr. Hanson described the *Canada Health Infostructure Partnerships Program* (CHIPP), launched in 2000, and the national evaluation effort. CHIPP is an $80 million, shared-cost incentive program supporting collaboration, innovation, and renewal in health care delivery through the use of information and communication technologies. This program invested in the implementation of innovative telehealth and electronic health

records (EHR) applications across Canada. It aimed at improving accessibility and quality of care for Canadians while increasing the efficiency and long term viability of the health system.

Implementation of CHIPP projects focused on 5 areas:

- **Facilitation** - to lay the infostructure; business and human foundations for sustained collaboration and implementation;
- **Evaluation/Knowledge Development** - to ensure comprehensive measurement of outcomes and impacts as well as build knowledge;
- **Awareness Raising** – to generate broad based support for the ICT's in health care renewal;
- **Planning for the Future** – results and lessons learned for evidence-based decision-making;
- **Prudent Management** – close monitoring to facilitate success and for prudence and probity.

CHIPP's efforts were focused on project, financial, risk and change management; sustainability; project and program evaluation; and dissemination. The opportunities for evaluation of each CHIPP project provided information to:

- demonstrate effectiveness of the federal investment,
- efficiencies of telehealth and EHR,
- learn what works, doesn't work and why for ICTs in health care, and
- contribute to a body of knowledge on evaluation.

Challenges to developing the CHIPP evaluation framework included a tight timeframe, no federal models, no "gold standard" and the diverse types of projects (not just telehealth). The evaluation framework was developed by integrating recommendations for the Canada Health Infoway, literature and past experience. It included outcomes identified in the Institute of Medicine model (quality, accessibility, cost, and acceptability), but went beyond it in demonstrating how each of these elements are policy driven. The CHIPP evaluation framework was adapted for the context of a publicly administered, publicly funded health care system and responded to CHIPP's broader range of goals and objectives. It addressed key themes such as integration, health related impacts, lessons learned, technology performance and privacy.

All evaluation plans for CHIPP funded projects were submitted and reviewed. A wide range of indicators was used with satisfaction being the most consistent. Data collection relied heavily on interviews, focus groups, surveys and anecdotal evidence. Short-term impact on *quality of care* was reflected in satisfaction measures while clinical outcomes were longer term. *Accessibility* was measured with greater richness and consistency. Quantitative measures were used to demonstrate changes in use of available services, in mix and nature of services, reductions in travel times and costs, reduction in time required for

service reads and emergency response times. *Acceptability* was demonstrated through satisfaction and user acceptance measures. A wide range of indicators for integration of telehealth and EHR were submitted. Even though a wide range of indicators for health impacts were identified, changes were difficult to assess in the short term. Societal impacts were also identified in communities and quality of life for health professionals in rural/remote areas. Data collection methods for cost efficiencies were often not precise and unit costs were more easily identified. Privacy was commonly addressed through user/patient survey and security audits.

Chatterton & Hanson concluded with a discussion of CHIPP as a 'proof of concept'- how the evaluation has provided the documentation to demonstrate the effectiveness of telehealth as an integral part of Canada's health care system.

3.1.2 Glocal e-Health Policy-Research and Evaluation

Dr. Richard E. Scott
Fulbright New Century Scholar and Associate Professor,
Health Telematics Unit, Faculty of Medicine, University of Calgary,
Calgary, AB

Dr. Scott introduced an international view of e-health policy. He noted e-health (telehealth) continues to advance and expand in its application. It has a significant healthcare and social role to play in overcoming growing demands for equitable and adequate provision of healthcare. Successful health related policy leads to increased welfare through better health outcomes, greater equity, increased user satisfaction, and lower total costs than might occur in the absence of public action. Yet at this time, policy development severely lags behind e-health development; indeed a policy void exists. The innate ability of e-health to cross all existing geo-political, socio-cultural, and temporal boundaries transforms this into a global issue. There is a significant and urgent need for e-health policy development.

Dr. Scott defined e-health policy as *"A set of statements, directives, regulations, laws, and judicial interpretations that direct and manage the life cycle of e-health."* He reviewed the available literature on e-health policy within Canada and globally, noting formal research literature for e-health policy is very limited, although some informal literature exists (such as government documents and web-based reports). He outlined key areas and levels of policy as well as actors involved in policy development, and emphasized the need to carefully consider the impact of local and domestic policy development on global ehealth policy issues, and vice versa (in other words, a 'glocal' e-health policy). Some examples of domestic e-health policy were identified (e.g. Malaysia), but it was emphasized that most countries have little or no such policy, and consequently no global e-health policy has been developed. Attention is growing in relation to the global health governance issue, but the placement of e-health in those debates has not yet occurred.

e-Health and global e-health policy were identified as areas requiring urgent research and action. To encourage such activity, approaches to e-health policy research were presented, including

- Historical – how did 'policy' develop?
- Developmental – what policy should exist?
- Comparative – what policy exists?
- Impact – What outcome resulted?
- Transferability – How has transfer of e-health policy been successfully accomplished?
- Policy Failure – When and why has any implemented e-health policy failed?

Dr. Scott's overall recommendation was that e-health be integrated into existing healthcare systems in a policy, not just a practicable, manner and that this be achieved with a "glocal" perspective. It will be necessary to establish globally acceptable policy principles and to use these to develop complementary domestic policy.

See Bibliography References:16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

3.2 Round Table Discussions

3.2.1 Key Issues to Drive Telehealth Policy

On Day 2 of the TRSI a round table question was introduced to generate discussion around issues that should drive telehealth policy:

> *Health care policies that support telehealth initiatives are critical for sustainability. What key issues should drive telehealth policy (for example, clearly defined benefits, cost-effectiveness, affordability, improvements in quality of life or clinical outcomes)?*

Discussion Summary

Separating issues into local, provincial, national and international levels may facilitate thinking about telehealth policy. Clearly defined needs – determined "bottom-up" and not "top-down" - are important at all levels to drive telehealth policy. In other words, needs should be determined by the community and be respectful of cultural, geographical and political differences. They can be defined through needs assessment and evaluation. Generic models for evaluation strategies at all levels are important for this reason.

Integration of telehealth into the health care system and moving beyond capital investments were identified as key issues influencing policy development. Interoperability standards at all levels, including technical, human, and operational are important to support integration. Policies and principles from different government domains should be consistent and reflect the same integration (e.g. Health Canada and Industry Canada).

Economic issues were also identified as important, with telehealth initiatives demonstrating appropriate cost benefit at all levels. Questions raised included: *Who gets paid for what, when, how? Can we use the fee structure as an enabler that supports telehealth applications?* Given the competition for funds, cost-effectiveness and affordability could be keys to sustainability. Remuneration and licensure issues at all levels may be equally important to drive telehealth policy.

Accessibility of health care and resources for Canadians as well as evidence of benefits were also identified as key issues to drive telehealth policy. Patient privacy and confidentiality were considered important to maintain patient trust. It is easy to lose patient trust if policy fails to support privacy and this may have a larger impact at a local level.

A number of other organizational issues were identified. Administrative and organizational policies and standards of practice for telehealth use should be established. These will address power structures between organizations using telehealth equipment, rules of engagement at the institutional level, knowledge (e.g. evidence) building and transfer, innovation and change.

3.3 Selected Literature Review – Policy Impact

Today's technological transformations are intertwined with another transformation – globalization - and together they are creating the network age[28,29,30]. These transformations expand opportunities and increase the social and economic rewards of creating and using technology. The existing rules, institutional mechanisms and forms of organization need to evolve to better respond to the emerging challenges of globalization and ensure that globalization benefits those currently left behind in the development process. The World Health Organization (WHO) explored the concept of Global Health Governance (GHG) in a series of discussion papers[31,32,33]. However, the question remains how the technology and globalization can be used to improve health throughout the world.

A number of papers have discussed the acute need for "policy" in telehealth[34,35,36]. Loane and Wootton[37] conducted a review to establish the range and scope of current telemedicine guidelines and standards. A number of benefits of implementing telemedicine guidelines are expected and many reports cited the need to develop telemedicine guidelines.

Many information and technology initiatives are currently underway in Canada and worldwide. Policies for how these will or should be deployed are limited or non-existent. There are some exceptions, for example, the *Tactical Plan for a pan-Canadian Health Infostructure-2001 Update* illustrates Canada's political commitment to e-health[38]. Another example of domestic e-health policy is the Malaysian websites that provide access to both e-related legislation and tele-consulting guidelines[39,40].

The health sector has realized the urgent need to face the challenge of globalization and information communication technologies in telehealth. However policies in these areas are scarce in most of the countries. To reach its full potential, telehealth should be seen by policy makers as an integrated part of the health care system at global and local levels.

4 Theme 3: Technical Impact of Telehealth

4.1 Presentations

4.1.1 Telehealth "Technology Issues"

Telehealth Interoperability Laboratory Overview - Dale Bergman
Telehealth Technical Issues - Pam Brockway, Ken Wong, Tim Fowlow, Corey Kereliuk
Alberta Research Council, Calgary, Alberta

The Alberta Research Council has created a Telehealth Interoperability Laboratory (TIL). The team at the TIL has developed and implemented a process that addresses the technical interoperability issues surrounding the delivery of telehealth services. They presented a brief introduction to the TIL and discussed technology issues that have risen at each step of the interoperability process.

Mr. Bergman defined interoperability as "the ability of two or more systems to interact with one another and exchange information in order to achieve *predictable* results." Interoperability is achieved through standards; however conformance to standards does not guarantee interoperability. Successful standards are developed in combination with users and industry, and require both national and international cooperation. Defining system requirements produces benefits for both the province and health regions by ensuring the equipment can deliver the required clinical services. System requirements also help reduce costs for telehealth vendors when they respond to a Request for Proposals. Interoperability requirements also benefit the province and health regions through reducing the costs and risks of purchasing telehealth equipment. They also define how telehealth vendors can accomplish interoperability in delivering telehealth services.

Four steps of the telehealth interoperability process were described in detail: requirements elicitation, system engineering design, validation test development and conformance testing.

Ms. Brockway described the **requirements elicitation** process as the first step towards defining technical telehealth interoperability requirements. *Users*, *requirement*, and *system* were defined. Challenges in requirements elicitation include not setting the context appropriately, non-technical user requirements, unclear user requirements, non-rated user requirements and conflicting views when clarifying.

Mr. Wong described how the **system engineering design process** translates functional requirements into technical requirements. System engineering and design issues include: deriving system technical requirements, understanding interfacing standards, familiarity of safety regulations, awareness of "state of technology" and balancing user needs and vendor capabilities. System technical requirements derived from user requirements may sometimes be over-specified, under-specified, or ambiguous. Many interfacing standards exist (e.g. HL7, DICOM, ISDN), as well as safety regulations. An awareness of the "state of technology" helps identify obsolete, mature, developing and emerging technology. It is also important to balance user needs and vendor capabilities.

Mr. Fowlow noted the **validation test development and execution process** includes developing test cases, test preparation, test execution, generating reports and test closure. Vague, redundant, or other difficult requirements may generate testing issues. Requirements are thus examined from a testing point of view. Input from the requirement source is required during test development and execution to prevent misinterpretation. Vendors may bring test issues that result in suggestions about resolutions to issues related to system reliability, e.g. non-reproducible system crashes and bugs. Lack of a single tool to test adherence to all standards is another issue.

Mr. Kereliuk identified three **general technology issues** affecting telehealth systems including: ease of use, quality assurance, and telehealth equipment manufacturers vs. telehealth system integrators. The Graphical User Interface (GUI), system tools, e.g. wizards, and system layout are very important aspects of making the system easy to use. Some generic and software quality management standards help assure quality. Unlike system manufacturers, telehealth integrators integrate multiple components to create a system. Possible issues that may arise include system interface, compatibility and support.

Three technical demonstrations were provided in the laboratory:

1. The DICOM Standard – Ken Wong
2. The HL7 Standard - Dean Yergens
3. Network Standards – Tim Fowlow and Corey Kereliuk

See Bibliography References: [41]

4.1.2 Policy & Peer Permission (PPP) System Project: Access Control Policies and the Potential Work-Related Impact of Technology

Dr. Maryann Yeo
Research Associate - Health Telematics Unit
University of Calgary

Dr. Yeo introduced a potential work-related impact of technology associated with new roles and responsibilities of health care professionals in their work environments that are brought

about through telehealth and the Electronic Health Record (EHR). These changes increase the need to establish access control policies to ensure patients' rights to privacy and confidentiality of their medical information as well as protection of health care providers. The Policy and Peer Permission (PPP) system automates the authoring and interpretation of policy for granting access (permission) to EHR's. There are 2 components: policy software development and policy development. Dr. Yeo's presentation focused on the second component of developing a "starter set" of workable policy statements for use with EHR systems in clinical practice.

Information security is a top concern of both patients and health care providers. Issues of security must be considered for successful information sharing among caregivers both within and among health-care sites as well as community practices. Effective protection of information depends on technology, policy and secure health care provider behaviors.

Security and confidentiality policies need to be established indicating the type of information considered confidential, people authorized to release and receive the information, procedures to release the information and include reference to any specific provincial and federal legislation regarding confidentiality of health care information.

Access control is an information security method that is used to manage who can obtain what information and what they can do with it. It allows providers timely and efficient information access where consent has been provided and prevents access where there is no authority or reason to do so. Access control ranges from very broad (e.g. allowing every authorized person access to all patient records) to different degrees of controlled access based on different users having access to different information on a "need-to-know" for the requested information. The major issue is how tightly access should be controlled. Access control measures include: rules and legislation; penalties for unauthorized access or misuse of information; role-based access control; organizational controls, such as training strategies, staff responsibilities and policies; and audit trails and monitoring of access.

The impact of implementing access control policies involves changes in work processes as well as the behavior of people and teams. People are a key component of information security and human behavior, whether intentional or unintentional, can be a security threat. The majority of security threats are internal and include security breaches such as sharing passwords, posting passwords where they are clearly visible, forgetting to log-off when away from the computer terminal, taking a copy and not disposing of it properly. Although technology is becoming a part of every aspect of health care, integrating technology into routine, everyday work may take longer and be a more challenging process than first thought. To address this, both *usability*, which focuses on identifying the characteristics of users under normal circumstances, and *user acceptance*, which identifies social and practical acceptability, are important.

EHRs require unprecedented information sharing between and among organizations. To successfully share information, each organization must define their uses for the information, determine a consistent set of elements most relevant to each intended use, and establish a uniform vocabulary. To successfully develop and utilize an EHR, organizations must examine how they currently share information, how this will change with implementation of EHR systems and how these systems will change the work of individuals within the organizations.

Both quantitative and qualitative evaluation methods can be used to assess the impact of access control policy and include: *usability* (e.g. focus groups, satisfaction measures); *security assessment* (e.g. Threat and Risk Assessment; Privacy Impact Assessment); and *security compliance* (e.g. periodic internal audits to assess system activity, spot checks, site visits).

Each organization has established communication and co-operation patterns and a unique culture. Organizational access control policies require procedures to translate their intent and goals into everyday practice. Operationalizing these procedures requires the development of policy statements that are tailored around: the specific health care sites involved; physician referral; consulting and communication patterns; and staff information sharing patterns in everyday clinical practice. In the PPP System Project, pilot site-specific policy statements are being developed as a set of scenarios that reflect principles and practicalities of access control.

See Bibliography References:42, 43, 44

4.1.3 Modeling eSecurity Risk, Illustrated in the RASCHR - PPP Context

Mr. Merv Matson
RightsMarket, Inc.
Calgary, Alberta

Mr. Matson introduced a method and technology to manage e-security risks. He noted the promise of telehealth and the EHR (electronic health record) are underpinned by the obvious power of the new digital technologies, which provide tremendous information processing capability. In addition, digital communication, between and mediated by networks of digital computers, has given us an awesome increase in information distribution capability. With this capability comes a risk of unauthorized users accessing information and a software technology was developed by RightsMarket to address this risk.

There are two types of risk analysis: qualitative and quantitative. A qualitative model analyzes system components and states, human actors/roles, risk possibilities, and possible defenses. It also analyzes risk dimensions, especially opportunity-time, and provides general information of areas of risk to be addressed. A quantitative model

attaches probabilistic, and perhaps monetary, values to the qualitative model. Mathematical expectation could be calculated with probabilities of events and anticipated losses due to the events occurring[45].

Components and actors of the PPP (Policy and Peer Permission) system were introduced. Possible risks include: information accident at client site or server; hacker break-ins at client site, specific component/state of the server or communications node or link; and legitimate user deliberate malpractice. 70 to 80 percent of security breaches come from the internal network; only 6% were deliberate[46]. An intuitive rate of risk occurrence of different types was presented. Three dimensions of risk analysis were discussed:

- The more visible/exposed, or attackable/defenseless the system is, the greater the risk will be.
- Longer time duration will also make the system more vulnerable.
- People may deliberately damage the system with different motivations, e.g. recreational, revenge, financial gain, etc. Accidental modes include email and leaving an EMR (electronic medical record) in an exposed state.

These risks are addressed with persistent information security that ensures security always goes with the record. The record is safe inside the repository and during net delivery. Persistent security crunches risk opportunity at point of use by drastically reducing the duration of exposure of EMR to accident. It permits peer-to-peer safe sharing of EMRs, even without clinical systems. In comparing the intuitive rate of risk occurrence of different types in persistent security systems to that of non-persistent security systems, persistent security could reduce the rates of risk occurrence by three orders of magnitude.

Implementation of persistent information security was further illustrated in the context of the PPP system development project, and its test deployment in the RASCHR (Regionally Accessible Secure Cardiac Health Records) system.

4.2 Round Table Discussions

4.2.1 Unanticipated Consequences of Using Telehealth Technology

It is clear that introducing change may have unanticipated consequences[47]. On day 3 of the TRSI a fourth question was introduced to generate discussion around unanticipated consequences of using telehealth technology:

> *How might this technology "get out of hand"? For example, other medical technologies have diffused before they were shown to be effective. What might be the unintended consequences for telehealth?*

Discussion Summary

Misuse of technology may be one of the unintended consequences, such as occurs when inappropriate investment in technology overrides more appropriate healthcare priorities.

Technology may be used because it is available, not because it is really needed. Too much reliance on technology also gives technology providers new powers that may be misused.

Reliance on technology may have several negative impacts on the quality of care. Health care delivery may be interrupted due to system or communication failure. If too complex technology is introduced and fails, people can become biased against future introductions.

Technology, rather than human factors such as communication, hands on care and bedside manners, might become the focus of patient care. Technologies should be subordinate to professional expertise rather than control or direct professional practice. Similarly, if technologies become the focus of care, telehealth systems may be introduced to communities that are not prepared to adopt them because of literacy, social and economic issues. People who do not want to use telehealth equipment may tend to move to areas where they can see a "real" doctor if personal contact between clients and health providers is lost.

Alternatively, the technology may have the unintended consequence of over extending practitioners by increasing workload. In a related way, telehealth should not be permitted to inappropriately extend scope of practice of health care providers. For example, unauthorized providers may deliver health care through e-health technologies.

The possibility of inequalities in health services may occur from several perspectives. A concentration of resources in major urban centers may influence the closure of small hospitals and specialist clinics. Alternatively, if only rural and remote regions receive telehealth services, referral patterns may change, further reducing the number of physicians in rural/remote areas. Funding may also be a problem if telehealth technology only serves a minority of users.

Diffusion of telehealth technology may increase training demands for both medical and nursing professionals. Organized skill development for operation of telehealth technology components will be required, but often lags far behind the technology introduction.

Other unanticipated consequences may result from conflicts between policy and e-health priorities. E-health should be introduced within the existing policy environment to ensure acceptance and appropriate use. Precipitous change management issues and ad hoc use should be avoided. As services are provided to clients in non-traditional catchment areas, boundary issues require new policy considerations. New policy considerations should be examined before the technology is widely used. On a positive note, diffusion of this technology may create a global health community to consult with and be networked to.

4.3 Selected Literature Review – Technical Impact

Issues of interoperability and organizational change present major challenges to the sustained success of telehealth programs. Interoperability is the ability of two or more systems to interact with one another and exchange information in order to achieve predictable results. A national telehealth interoperability workshop held at Alberta Research Council in 2001 examined the issues of interoperability and offered suggestions on how interoperability issues may be addressed[48]. The report provided a review of the major telehealth interoperability issues in the clinical, technical, and operational domains. The core issues included: licensure, patient records, risk management, remuneration, connectivity, standards, peripherals, security, ease of use, cost-benefit, privacy, human resource/education.

The report discussed barriers to interoperability, including funding, legislation, communication, complexity, and lack of a business case. It also offered recommendations and initial action steps to address the issue of telehealth interoperability. For example, it recommended that the Federal/Provincial/Territorial Working Group on Telehealth (FPT-TWG) and Health Canada's office of Health and Information Highway provide major roles in leadership and support. The Canadian Society of Telehealth (CST) might make an appropriate choice for a coordinating body based on its broad ties to the telehealth community. Developing a Telehealth Interoperability Business Plan with input from organizations already involved in telehealth interoperability issues could be undertaken. It was also suggested that collection and synthesis of the telehealth interoperability elements be compiled into a framework to address telehealth interoperability implementation and sustainability.

The major challenges to system success are often more behavioral than technical. This means that successfully introducing such systems into complex health care organizations requires an effective blend of good technical and organizational skills[49]. A number of studies examining the people, social, and organizational issues in medical systems suggest organizational factors may be critical determinants of implementation success or failure. One study surveyed 1335 individuals working in informatics and library areas in the US[50] and concluded that organizational attributes were important predictors for the diffusion of information technology use within organizations. In another qualitative study of organizational consequences of telemedicine[51], 30 persons working in telemedicine were interviewed. Almost all respondents reported numerous types of organizational changes, with changes in work process being the most common. Significant organizational communication deficits were identified in a case analysis of the University of Kansas Telemedicine Program[52].

A number of authors have suggested frameworks for conducting evaluation studies at an organizational level. Kaplan's social interactionist framework is used to address

organizational issues in computer information systems in medicine and health care[53]. Kaplan's 4Cs framework focuses on communication, care, control and context. Five methodological guidelines for conducting comprehensive evaluations address these 4Cs. Aas developed a framework consisting of eight points for analysis of organizational consequences, which may be a starting point to understand the problem of organization changes brought by introducing telemedicine[54].

5 Discussion

Issues related to the socio-economic, policy and technical impact of telehealth initiatives provided the focus for presentations and small group discussions throughout the TRSI 2002. Key ideas from the literature rounded out this thinking. Advancing the field of telehealth/e-health requires further discussion around priorities in three areas: research, evaluation and policy development.

5.1 Research Priority Areas

Research activities in telehealth and e-health have been gaining momentum in the past 5-10 years as more researchers enter the field and funds are allocated to this area of research. Research activities focus on developing conceptual thinking and theoretical frameworks necessary to advance the field. Clearly there have been many developments in the area of socio-economic factors that influence determinants of health as well as health indicators. Both the presentations and discussions highlighted a more recent focus on understanding the population health impact of interventions rather than solely focusing in the short term on the local project participants.

Research into the socio-economic impact of telehealth can advance in a number of areas, particularly around conceptualization of the contribution of telehealth initiatives to health and health care. This may include design of new health service models that seamlessly incorporate e-health or appropriate economic models to determine benefits. Within the context of determinants of health, this research could also determine appropriate indicators and measures that reflect the contribution of telehealth, including development of reliable and valid instruments for capturing data in these areas.

Not only does the research need to focus on health outcomes, but also extend into the impacts of introducing organizational change. Results of recent studies should be extended to inter-organizational changes when services cross local and international jurisdictions. Adoption of telehealth technology requires attention to a number of important research areas, including policy software, further advancing the telehealth interoperability process and human resource requirements.

Researchers must also attend and respond to the need for policy-driven research. As noted in the discussions around policy, or lack thereof, there is a continued need for framework development around e-policy research. Once policies have been established and implemented, for example policies to ensure EHR security, its implications need to be re-visited.

In an area of rapid change and development, research around 3rd wave, intelligent technologies, including digital remains critical. As demonstrated by the work completed to date on interoperability and standards on many levels, collaboration among partners in industry, government, research and practice is required.

5.2 Evaluation Priority Areas

Evaluation activities are an important aspect of applied research and require a sound conceptual basis for the selection and use of tools. Frameworks that are valid and reliable as well as used consistently in the field are needed to provide useful, comparative data. The "knowledge translation" activities that move research results into practice are an important aspect of evaluation. These could be strengthened through adopting practical mechanisms to apply research findings in evaluation framework development and data collection tools. In much the same way as common health indicators have been adopted, policy intervention may be required for the consistent use of e-health indicators. Funding programs such as CHIPP illustrate that this strategy is possible on a national level.

As the small group discussion on Day 3 illustrated, it was challenging to consider the unanticipated and potentially undesirable effects of implementing telehealth/e-health initiatives. This is partly because those involved in implementation tend to be champions who see the benefits. Evaluation can play an important role in determining the unintended consequences of adopting this technology. Questions that might be asked include: Is there an optimal mix of face-to-face and technology mediated services in a community? If so, how do we determine it? While a balance of services may be sought based on financial issues (e.g. it is more cost effective to provide video-consultation to members of a community than to financially support a specialist to live in the community), the unintended consequences may be the destruction of services in a small community as physicians do not see enough patients to stay in business.

Evaluation should extend to organizational factors including human resource implications in program implementation. This includes training for health care professionals who deliver e-health services, as well as for telehealth coordinators, researchers, policy-makers, and decision-makers. A broader training base may also increase awareness of the "glocal" aspect of policy, i.e. the local and global implications, as well as the need for policy interrelationships at multiple levels.

Evaluation should also include continued testing of interoperability standards in practice. This includes an active, continued awareness of interoperability testing being communicated at national and international venues.

5.3 Policy Development Priority Areas

While the importance of policy and resulting policy issues have been recognized as part of the development of telehealth initiatives, integrating e-health services into the traditional delivery system requires broader thinking than that required to ensure a local project or program is successful. Policy is both necessary to support integration as well as itself must be integrated at regional, national and international levels of decision-making. It is necessary to establish globally acceptable policy principles and domestic policy.

Sound evidence of the socio-economic benefits of e-health initiatives is needed prior to the move to implementation and integration. Translation of these research and evaluation findings into policy is a critical factor in moving this agenda forward. Clearly there needs to be champions in all sectors: academia, government, industry and practice for this to occur. Achieving this will require taking advantage of opportunities for increased participation across groups, for example, including more policy developers in planning and implementation.

5.4 Overall Recommendations

A number of issues were common to all three themes of the TRSI and recommendations for their resolution, include:

- Sound policies related to the human resource implications resulting from e-health initiatives are required. These should include results of research and evaluation into the changes in professional roles, organizational change management and stakeholder readiness to accept the change.
- Participants agree that telehealth sustainability depends on integration into existing services rather than initiatives being seen as "adjuncts." A number of policy considerations arise from this and require attention from funding bodies, researchers, policy makers and professional organizations (e.g. Canadian Medical Association, Canadian Nurses' Association). These include:
    - Policy implications related to remuneration and licensure are slowly being resolved. While the need for integration will continue to challenge policy development, it must remain a core tenant.
    - Policy considerations must support integration of ehealth with traditional services, as well as with the Electronic Health Record.
    - Policy development must consider both the local and global impact.
- While participants generally recognized there are benefits to developing consensus on standards and evaluation tools/methods, implementation challenges remain.

Leaders in research and evaluation need to take a greater role in the translation and dissemination of results to support a consensus building approach.

6 Summary

The annual TRSI provides a forum for interested participants from industry, government, academia and practice to actively discuss current ideas in e-health. The TRSI 2002 themes - socio-economic, technical and policy impact of telehealth - provided a framework for discussion and recommendations for future directions.

Dissemination of this discussion document will provide additional opportunities to not only stimulate discussion and debate around relevant issues, but also engage a wider audience in influencing e-health policy, practice, and research. Continued discussion and debate of relevant issues will continue at TRSI 2003 on June 25-27.

Appendices

Appendix A - TRSI 2002 Participants

HTU Organizing Committee

- Marilynne Hebert – Chair
- Richard Scott
- Penny Jennett

Speakers

- Chris Anglin – Consultant, UVIC
- Sandra Chatterton – Health Canada, Ottawa
- Robert Hanson – Health Canada, Ottawa
- Penny Jennett – Health Telematics Unit, University of Calgary
- Merv Matson – RightsMarket, Calgary
- Jochen Moehr – School of Health Information Science, UVIC
- Richard Scott –Health Telematics Unit, University of Calgary
- Karl Stroetmann - Institute for Communications and Technology Research, Bonn, Germany.
- Maryann Yeo – Research Associate, Health Telematics Unit, University of Calgary

Alberta Research Council

- Dale Bergman
- Pam Brockway
- Tim Fowlow
- Corey Kereliuk
- Ken Wong

Graduate Students

- Faruq Chowdhury
- Andora Jackson
- Ali Jadavji
- Anmol Kapoor
- Mone Palacios
- Basia Siedleki

Facilitators

- Sharlene Stayberg – Alberta Provincial Telehealth Director, Edmonton, AB
- Carol Anderson – CA Consulting, Wetaskiwin, AB
- Roberta Staveley – Telehealth Resource Group, Calgary, AB

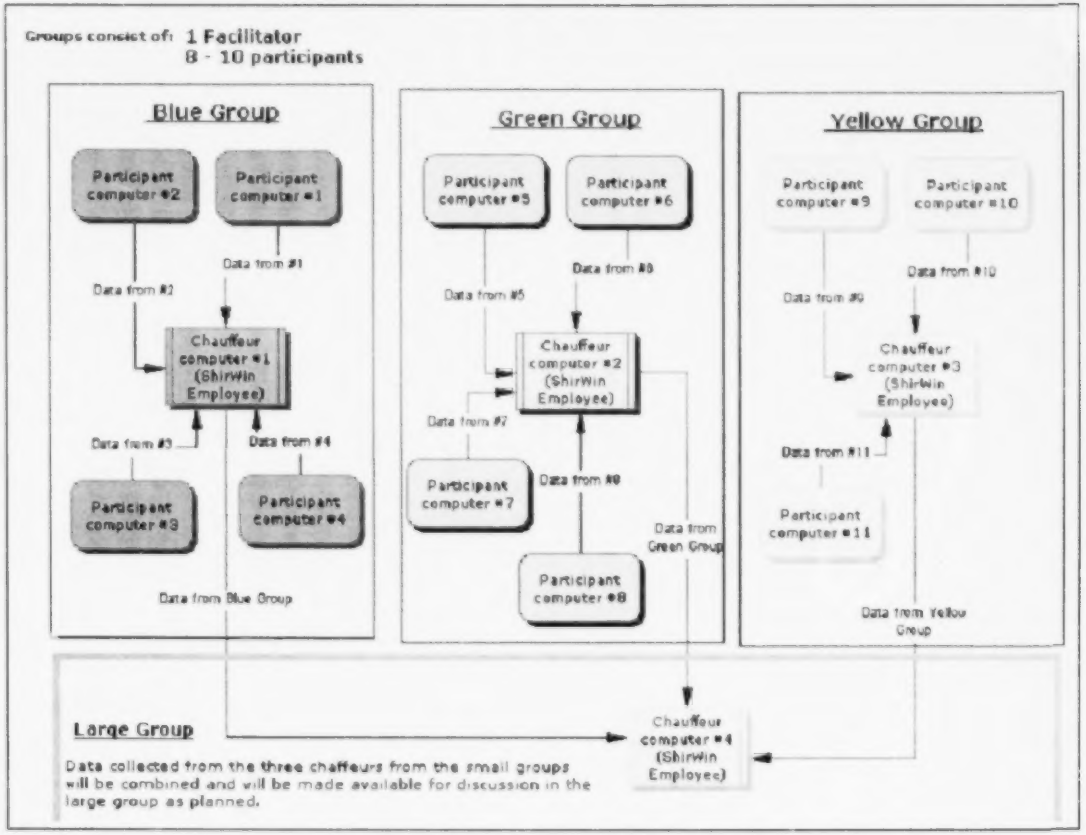
MeetingWorks Technical Support – ShirWin Knowledge & Learning Systems Inc. – Edmonton, AB

- Debra Greig
- Liza Bialy
- Alice Elliott

Participants

- Jean-Paul Fortin – University of Laval
- Joseph Gebran – Telehealth Director, Capital Health Region, Edmonton
- Allison McKinnon – Alberta Alcohol & Drug Abuse Commission
- Julian Somers – Mheccu - University of British Columbia
- Colin Stafford – British Columbia Ministry of Health
- Sybil Young – Alberta Children's Hospital Telehealth Coordinator, Calgary Health Region
- Lin Zhu – Alberta Mental Health Board

Appendix B – MeetingWorks Configuration



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Programme de recherche sur les politiques
en matière de santé
Résumé du rapport final

Titre :	**3e Atelier d'été de recherche en télésanté 21 – 23 juillet 2002**
Nom du chercheur :	**Madame Marilynne Hebert**
Date de la fin du projet :	**Décembre 2002**
Catégorie de recherche :	**Atelier**
Institution :	**Université de Calgary**
Numéro du projet :	**6795-15-2002/4430021**

Résumé

Introduction

En juillet 2000, l'unité de télématique de santé de l'université de Calgary a tenu la première session d'étude intensive, appelée **Telehealth Research Summer Institute (TRSI)**. Cet événement se déroule désormais à tous les ans, et met l'accent sur la recherche et l'évaluation des programmes de télésanté et des initiatives d'apprentissage à distance. La troisième session annuelle TRSI s'est déroulée du 21 au 23 juillet 2002. Parmi les participants, on compte des membres des secteurs public, professionnel, universitaire et privé intéressés à la mise en application et à la durabilité de télésanté. Ces membres ont pris activement part à des discussions sur l'incidence de la télésanté et ont contribué aux recommandations dans le but de faire progresser la politique et la recherche. La session TRSI de 2002 traitait principalement des trois thèmes suivants : les incidences socio-économiques, les incidences techniques et les incidences politiques de la télésanté.

Le **document de discussion** regroupe les présentations et les discussions en petits groupes de TRSI 2002, ainsi que les principales références offrant des idées additionnelles. Du matériel supplémentaire, tel que des notes des groupes de discussion et des diapositives de présentation, sera affiché sur le site Web de l'unité de télématique de santé, à www.ucalgary.ca/telehealth au début de 2003. Le document de discussion TRSI 2002 circule largement parmi les collègues intéressés à la cybersanté, notamment les participants et conférenciers de TRSI (tous les trois ans), les coordonnateurs de

télésanté, les commissionnaires de la Société canadienne de télésanté et de COACH, les départements universitaires dotés de programmes informatiques sur la santé, les sous-ministres adjoints de la Santé, les chefs de file de l'industrie et les autres.

Les problèmes liés aux incidences socio-économiques, politiques et techniques des initiatives de télésanté ont permis d'établir les objectifs des présentations et des discussions en petits groupes tout au long de TRSI 2002. Les principales idées dégagées du document ont permis de compléter cette philosophie. Faire progresser le domaine de la télésanté et de la cybersanté nécessite d'autres discussions touchant les priorités dans trois domaines, dont : la recherche, l'évaluation et l'élaboration de politiques.

Domaines prioritaires de recherche

Les activités de recherche en télésanté et en cybersanté ont gagné de la popularité au cours des cinq à dix dernières années, car les chercheurs y sont plus nombreux et des fonds sont dorénavant alloués à ce domaine. Ces activités sont axées sur l'accroissement de la pensée conceptuelle et de cadres théoriques nécessaires à la progression du domaine. Manifestement, il y a eu de nombreuses réalisations relatives aux facteurs socio-économiques qui influent sur les déterminants et les indicateurs de la santé. Les présentations et les discussions mettaient toutes deux l'accent sur un objectif plus récent visant la compréhension des incidences des interventions sur la santé de la population plutôt que sur la santé des participants locaux du projet à court terme.

La recherche sur l'incidence socio-économique de la télésanté peut progresser dans un certain nombre de domaines, notamment celui de la conceptualisation en matière de contribution des initiatives de télésanté et des soins de santé. Cela peut comprendre la conception de nouveaux modèles de services de santé qui incorporent directement la cybersanté, ou de modèles économiques appropriés permettant d'établir les avantages. À l'égard des déterminants de la santé, cette recherche pourrait également établir des indicateurs et des mesures appropriées qui reflètent la contribution de la télésanté, y compris la création d'instruments fiables et valables permettant de saisir des données dans ces domaines.

Non seulement la recherche doit-elle étudier les conséquences pour la santé, mais elle doit également tenir compte des incidences de l'introduction du changement organisationnel. Les résultats des études récentes devraient pousser plus loin les changements interorganisationnels lorsque les services touchent à la fois les autorités locales et les compétences internationales. L'adoption de la technologie de la télésanté nécessite une attention particulière quant à un certain nombre de domaines de recherche importants, notamment à l'égard d'un logiciel des politiques, faisant progresser davantage le processus d'interopérabilité de télésanté et les exigences en ressources humaines.

Les chercheurs doivent aussi tenir compte du besoin en recherche à orientation prédéterminée, et répondre à ce besoin. Comme il a été mentionné durant les discussions visant les politiques, ou l'absence de politiques, le besoin d'élaborer un cadre touchant la

cyberpolitique est toujours présent. Une fois les politiques établies et mises en application (par exemple, les politiques permettant d'assurer la sécurité du DES), ses incidences doivent être réexaminées.

Dans un domaine qui change et qui évolue constamment, la recherche sur la troisième vague et les technologies intelligentes et numériques demeure cruciale. Comme le démontre le travail achevé à ce jour portant sur l'interopérabilité et les normes à de nombreux niveaux, une collaboration entre les partenaires au sein de l'industrie, de la fonction publique, de la recherche et de la pratique est nécessaire.

Domaines prioritaires d'évaluation

Les activités d'évaluation constituent un aspect important de recherche appliquée et nécessitent des bases conceptuelles saines pour la sélection et l'usage d'outils. Des cadres valables et fiables, et utilisés de façon constante dans le domaine, s'imposent si l'on veut fournir des données utilitaires et comparatives. Les activités d' « application des connaissances » qui transposent les résultats de recherche dans la pratique forment un aspect important de l'évaluation. Ces activités pourraient être renforcées par l'adoption de mécanismes pratiques servant à appliquer les résultats en recherche dans l'élaboration d'un cadre d'évaluation et d'outils de saisies de données. De façon similaire à l'adoption d'indicateurs de santé communs, une intervention en matière de politiques peut s'avérer nécessaire à l'usage compatible des indicateurs de la cybersanté. Les programmes de financement, comme le PPICS, montrent que cette stratégie est possible à l'échelle nationale.

Comme l'a démontré le petit groupe de discussion du jour trois, l'examen des effets non anticipés et potentiellement indésirables de la mise en place d'initiatives de télésanté et de cybersanté s'est révélé un défi. Cela s'explique en partie par le fait que les personnes participant à la mise en place tendent à être des championnes réalisant les avantages. L'évaluation joue un rôle important dans la détermination de conséquences non intentionnelles découlant de l'adoption de cette technologie. Les questions pouvant être posées comprennent notamment : Dans une collectivité, y a-t-il un mélange optimal de contacts directs et de services médiatisés? Dans l'affirmative, comment cela peut-il être établi? Bien qu'un équilibre des services puisse être recherché en fonction des problèmes financiers (p. ex., il est plus rentable d'offrir une vidéo-consultation aux membres d'une collectivité que de soutenir financièrement un spécialiste pour le faire vivre au sein de la collectivité), cela peut avoir des conséquences non intentionnelles, comme l'abolition de services administrés dans une petite collectivité, puisque les médecins ne voient pas suffisamment de patients pour continuer à pratiquer.

L'évaluation devrait toucher les facteurs organisationnels, incluant l'impact des ressources humaines dans la mise en application du programme. Cela comprend la formation de professionnels de la santé qui administrent des services de cybersanté, ainsi que celle de coordonnateurs de télésanté, de chercheurs, de responsables des orientations politiques et de décisionnaires. Une base de formation plus complète peut également accroître la sensibilisation de l'aspect « glocal » de la politique, notamment les incidences

locales et globales, ainsi que le besoin d'interdépendance de la politique à de multiples niveaux.

L'évaluation devrait aussi viser l'analyse continue des normes d'interopérabilité en place, ce qui comprend une sensibilisation active et continue de l'analyse d'interopérabilité, qui est communiquée dans des lieux à l'échelle nationale et internationale.

Domaines prioritaires d'élaboration de politiques

Bien que l'importance de la politique et des problèmes qui en découlent ait été reconnue dans l'élaboration des initiatives de télésanté, l'intégration de services en cybersanté au système de prestation traditionnel nécessite une pensée plus globale que celle requise pour assurer le succès d'un projet ou d'un programme local. La politique est nécessaire à la fois pour appuyer l'intégration et s'intégrer aux niveaux des décisionnaires régionaux, nationaux et internationaux. Il est nécessaire d'établir globalement des principes acceptables en matière de politiques et une politique intérieure.

Une preuve solide des avantages socio-économiques découlant des initiatives en matière de cybersanté est nécessaire, avant de pouvoir la mettre en application et l'intégrer. L'application de ces résultats de recherche et d'évaluation dans la politique constitue un facteur crucial dans l'avancement de ce programme. Manifestement, on se doit d'être des champions dans tous les secteurs : universitaire, ministériel, et dans la pratique de sa profession. Atteindre ce but se résumera à tirer avantage des occasions pour accroître la participation de tous les groupes, par exemple, en intégrant davantage de décisionnaires au sein de la planification et de la mise en application.

Recommandations globales

Certains problèmes se retrouvaient dans les trois thèmes de TRSI, et les recommandations pour les résoudre comprenaient celles qui suivent.

- Des politiques saines liées à la participation des ressources humaines, découlant des initiatives en matière de cybersanté, sont nécessaires. Ces politiques devraient englober des résultats de recherche et d'évaluation relatifs aux changements des rôles professionnels, à la gestion organisationnelle des changements et à la réceptivité des intervenants à accepter ces changements.

- Les participants conviennent que la durabilité de la télésanté dépend de son intégration au sein des services déjà existants plutôt que des initiatives qui sont vues comme des « rajouts ». Un certain nombre de facteurs sont par la suite soulevés, et doivent être examinés par les organismes de financement, les chercheurs, les décisionnaires et les organisations professionnelles (p. ex., l'Association canadienne médicale et l'Association des infirmières et infirmiers du Canada). Entre autres facteurs, en voici quelques-uns :

- Les incidences sur les politiques générales relatives à la rémunération et à l'autorisation d'exercer sont lentement résolues. Bien que la nécessité d'intégration continue de mettre à l'épreuve les incidences sur les politiques générales, cela doit demeurer un tenant fondamental.
- Les considérations relatives aux politiques doivent appuyer l'intégration de la cybersanté au sein des services traditionnels, ainsi que le dossier électronique de santé.
- L'élaboration des politiques doit tenir compte des incidences locales et globales.

- Alors que les participants ont généralement reconnu qu'il existe des avantages à l'élaboration de consensus, à l'égard des normes et des outils et méthodes d'évaluation, des contraintes liées à sa mise en application existent toujours. Les dirigeants en recherche et évaluation doivent assumer un rôle plus important touchant l'application et la diffusion des résultats, afin d'appuyer une approche relative à l'établissement de consensus.

Sommaire

La session annuelle TRSI constitue un forum pour les participants intéressés de l'industrie, de la fonction publique, du milieu universitaire et de la pratique privée, pour discuter activement des idées actuelles en cybersanté. Les thèmes de TRSI 2002 (les incidences socio-économiques, techniques et politiques de la télésanté) ont offert un cadre propice à la discussion et aux recommandations, qui serviront à l'orientation future.

La diffusion de ce document procurera des occasions supplémentaires qui serviront non seulement à favoriser une discussion et un débat sur des questions pertinentes, mais aussi à cibler un auditoire plus important pouvant exercer une influence sur la politique, la pratique et la recherche en matière de cybersanté. Une discussion et un débat sur des sujets pertinents se poursuivront à la session TRSI 2003, qui se déroulera du 25 au 27 juin.

Les opinions exprimées ici ne représentent pas nécessairement le point de vue de Santé Canada

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